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Biocultural diversity conservation for island and islanders: Necessity, goal and activity

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Abstract Cultural diversity is highly dependent on the regional environment and natural resources. From an environmental historical perspective, the course of destruction of human civilization resulting from the depletion of ecosystems and resources, we confirm how the sustainable use of resources and appropriate conservation strategies are contributing to regional development. Due to the recent rapid changes in climate, the environments of oceanic and island regions are changing and the ecosystems and biological diversity are also undergoing significant changes. Island residents are very vulnerable to the changing natural environment, and diverse cultural characteristics and ecosystem knowledge that has been maintained up until now are under a threat of gradual extinction. Traditional culture and knowledge are related to the survival of islanders. This situation is understood throughout the world; in response to which, international organizations such as the IUCN and UNESCO, etc. have also put forth continuing efforts in preserving the life, cultures, ecology and knowledge of the island regions. This paper purports to provide a brief description of the international trends and backgrounds based on the ‘Island Biocultural Diversity Initiative’ and the latest activities.

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Where culture can link with biological diversity

What is culture? And how does culture link to biodiversity conservation? The concept of culture marshals multiple meanings, and has come to be defined differently depending on the historical era, ideology or social group. Nonetheless, UNESCO’s World Declaration on Cultural Diversity, has defined culture

broadly as representing “psychological, physical, intellectual and emotional characteristics that a certain society or a societal group possesses.”¹ In addition, included in this are not only arts and literature, but also lifestyle, ways of harmony, values, traditions and religions as well.” The Korea National Culture Encyclopedia similarly emphasizes the relationship of humans with their environment, defining culture as a “product of physical-psychological processes through which the individuals or human populations of a society have changed nature.”

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¹ UNESCO Universal Declaration on Cultural Diversity, Adopted by the 31st Session of UNESCO’s General Conference, Records of the General Conference, 31st Session Paris (15 Oct.–3 Nov. 2001). Vol. 1, Resolutions, Paris: UNESCO, 2002. pp. 62–63. <<http://unesdoc.unesco.org/images/0012/001246/124687e.pdf>>.

Cultural diversity (that is, the diverse methods through which a group or a societal culture expresses culture ([International Conference on Biological and Cultural Diversity, 2010](#)) can therefore be expressed through a variety of methods, including artistic creation, production, dissemination, distribution and transmission, etc., in addition to the various methods of expression, proliferation and delivery of human cultural heritage through diverse cultural expressions. Here, I focus on the diverse and many links between culture and the environment that allow culture to exist, and that are transmitted through the generations.

Biocultural diversity – a practical encounter between biological and cultural diversity

Although the key aspects of biological diversity are separated mainly into species, habitats and ecosystems (reference), the influence of humans on bio-organisms occurs on a landscape scale and global scale. Need another sentence here to link the previous sentence with the next one. We therefore need to emphasize awareness of biological diversity that goes beyond biological concepts alone. In particular, biological diversity and cultural diversity are linked in landscapes where traditional livelihoods, and ultimately human survival, are based on natural resources ([Wu, 2011](#)). Within these landscapes, biological culture forms, advances and also changes ([Maffi and Woodley, 2010](#); [Hong, 2011a,b](#)). Protected and sanctuary areas are now appearing throughout the world as the wisdom of utilizing bio-organisms is projected onto the entity of culture during the long history of the humankind. Residents protect these places and recognize them as places that represent their identity.

If biological diversity indicates ecological health and qualitative characteristics within the natural ecosystems, then cultural diversity has a critical capacity of improving the resilience of socio-ecological systems ([Maffi, 1998](#)). In order to ensure the survival of cultural diversity, the capacity of human systems that adapt to changes must be improved.

[Table 1](#) presents a study that serves as a bridge that can connect nature with systems of culture, which are separated academically. Currently, many disciplines explore aspects of biodiversity and culture in isolation. Nonetheless, the disciplines and foci listed in [Table 1](#) can serve as a bridge to connect biological and cultural diversity. For example, at the center of these fields, scientific knowledge (landscape ecology, biological diversity, etc.) can also be associated with development processes and international politics; international politics can be associated with the preservation of biological resources (Commons studies, political ecology, etc.); along with humanities research (anthropology, environmental sociology, environmental history, etc.) that is associated with significant changes in humans and societies ([Rapport, 2006](#)). Nature and culture come in contact in many areas, including values, religion, lifestyle, knowledge and language ([Berkes, 2004](#); [Berkes et al., 2000](#)). The natural environment supports culture in that the process of culture, behavior, beliefs and diverse cultural results are manifested and settled in the landscape. The link between cultural diversity and biological diversity is practical, as well as spiritual. Throughout the world, because the key regions with high biological diversity tend to be inhabited by ethnic minorities and have high density in linguistic diversity, they are places of high importance in terms of cultural diversity. Since

the 1990s, discussions about the link between biological diversity and cultural diversity have been actively conducted; the concepts of “bioculture” and “biocultural diversity,” where the boundaries of the two areas meet, are now established; and the related academic disciplines have been advancing rapidly ([Pretty et al., 2009](#)).

International recognition and proliferation of concept of biocultural diversity

Increasingly, business people and politicians in developed nations have been challenged to consider the severity of climate change and the effects of indiscriminant development. By using various cases, the level of dependence of humans on bio-organisms and ecosystems, and how culture is linked to biological diversity, and how culture has come to being have been explained. International organizations such as the UNEP, UNESCO, CBD and the IUCN, have demonstrated a high level of recognition for the mutual relationship between biological diversity and cultural diversity. For example, the UNEP GEO-4 (2007) recommended that human cultural diversity, which affects ecosystems and biological diversity, be included in the concept of biological diversity; the UNESCO has convened meetings of experts in Aichi, Japan (April 2004) and Paris, France (September 2007) to discuss action on biological diversity and cultural diversity. Furthermore, Article 8j of the CBD emphasizes the importance of sustainable use and preservation of biological diversity. Increasingly, scientific conferences are also focused on biological diversity and indigenous peoples; at the 4th IUCN World Conservation Congress (The Fourth WCC, Barcelona), included a symposium and events related to biological diversity and indigenous people. During 2009–2012, IUCN programs were approved to recognize the importance of cultural diversity and cultural values related to the nature and indigenous people. At the IUCN’s Commission on Environmental, Economic and Social Policy (CEESP), a variety of projects are being pursued under the vision that the world is intertwined with biological diversity and cultural diversity.

2010 was the UN’s International Year of Biological Diversity and also the International Year of Rapprochement of Cultures. These designations were particularly significant, given the destruction of Earth’s ecosystems due to climate change, indiscriminant development, resource use-motivated destruction of original forms of ecosystems, pollution, etc. and deterioration of value of biocultural diversity. Amidst the variety of commemorative programs conducted worldwide, the Convention on Biological Diversity (CBD) international conference was held from 8 to 10 June 2010. The Convention on Biological Diversity is an inter-national agreement of the UNEP enacted in 1993 and purposed with the conservation of biological diversity, sustainable use of diverse biological species, commercial use of genetic resources, and joint sharing of generated profits from these and other uses. As required indicators for discussions on the sustainability of the global environment and communities, interests in biological diversity and cultural diversity already carry an international importance ([CBD, 2013](#)).

The launch of ‘Island Biocultural Diversity Initiative’

Improving the quality of life of islanders by preserving and utilizing the unique biological resources and cultural resources of

Table 1 Scholarly boundaries of studies of nature and culture and interdisciplinary research fields (Pretty et al., 2009). Island biocultural diversity and its academic application linking the gap between natural systems and societal systems are pointed out (revised by author).

- *Agricultural sustainability*: Development of agricultural systems and special crops that take into consideration the adaptation capacity for environment of island region soils (e.g., plant bulb industry, etc.)
- *Environmental sociology/ethnobiology*: Comparison of traditional knowledge about bioresource and ecological environment of islanders, indigenous knowledge, life-cycle of indigenous people
- *Biological diversity*: Biological resources and traditional knowledge of inhabited and uninhabited islands
- *Ethnobotany*: Comparison of traditional plant use by the world's islanders (medicinal, fishing, housing, etc.)
- *Cognitive anthropology*: Anthropological research about island identity and recognition system
- *Ethnoecology*: Comparison of formation and development of fishing tools in island regions
- *Commons studies*: Fishing communities, tidal communities
- *Enthnolinguistics*: Comparison of world's island regional dialects and linguistic diversity
- *Cultural anthropology*: Studies on island lifestyles, resource use and practices
- *Ethnoscience*: Comprehensive information about traditional ecological knowledge and information
- *Cultural geography*: Inter-island cultural exchange and networks
- *Historical ecology*: Diachronic perspectives on relationship between humans and resources within the history, human's adaptation to disasters such as natural disturbances, restoration, process of use of nature
- *Cultural (landscape) ecology*: Formation and development of village landscapes
- *Human ecology*: Studies of human environment and life, including health, health care, improving the quality of life
- *Deep ecology*: marine conservation, nature conservation theory, environmental movement
- *Human geography*: Human's life history and space, space awareness, space utilization, resource distribution, geographic movement
- *Descriptive historical particularism*: theory of community residents, resident life history
- *Indigenous knowledge*: Biological resources, traditional knowledge, fishing methods, fishing tools, tidal times, climate adaptation, tidal activity, algae (sea vegetables) use
- *Development studies*: Development and conservation of island regions
- *Intercultural education*: multiculturalism, foreign workers, migration
- *Ecofeminism*: Social roles of island women (e.g., divers, multiculturalism, etc.)
- *Landscape ecology*: Land use and changes in ecological space of island regions
- *Ecological anthropology*: Environmental adaptation by local residents, cooperation with traditional knowledge and in-depth ecology, food culture, etc.
- *Nature society theory*: Theory on the organic relationship between nature and society. Flow of socioeconomic phenomena including movement of assets such as capital and accumulation of capital, etc.
- *Ecological design*: Island living space that conforms to natural systems, sustainable island design, carbon energy reduction, and architecture that considers energy efficiency, etc.
- *Political ecology*: Cooperation of municipal government – experts – residents, stakeholders' understanding of politics, resource sharing, community operation and activities, etc.
- *Ecological economics*: Creation of ecosystem services, sustainable economic model
- *Resilience sciences (ecological restoration and cultural restoration)*: natural environment restoration, cultural restoration, restoration of ecological space, cultural biological restoration
- *Ecosystem health*: Natural resources and environmental quality assessment, ecosystem integrity of tidal flats and islands, biodiversity assessment, efficiency of environmental impact assessment
- *Science and technology studies*: Advancement of science and technology for increasing space usage, habitat restoration and sustainability.
- *Environmental anthropology*: Environmental history on use of resources, interactions of humans and resource
- *Socio-ecological systems*: Efficient functions of socio-economic systems
- *Environmental education*: Resident education, continuing education, local education, biological resource use theory, indigenous knowledge, traditional knowledge, exchange of information, etc.
- *Sustainability science*: Assessment of environmental adaptation capacity for sustainable utilization of human's basic needs such as energy, water, land, etc.
- *Environmental ethics*: Dignity of life during development, preservation of traditional knowledge and living space of local people
- *Symbolic ecology*: Comparative culture and anthropological studies of the historical and symbolic objects of local and indigenous people. Resource use and cultural installations seen in folklore and rituals.
- *Environmental history*: Diachronic theory on resources and human activities, case studies, analyses
- *System ecology*: Quantitative studies on the activities of bio-organisms and non-living organisms within eco-system such as material cycle of ecosystem, energy flow, ecological systems, etc. Preservation of ecological networks such as forest – river – estuary – tidal – coastal boundary, etc.

South Korea's archetypal island region of the South–West Sea archipelago is well warranted; sharing their ecological values with the world is worthwhile as well (Hong, 2012). The 5th World Conservation Congress (WCC) held in Jeju-do, Korea in September 2012 highlighted the need to preserve biological diversity and use resources sustainably. It proposed and passed an initiative to “Strengthen Biocultural Diversity and Traditional

Ecological Knowledge in Asia-Pacific Island Regions” (Table 2). This initiative noted that – due to the climate change-driven changes in fisheries of the island-coastal areas, excessive human activities and marine pollution – the sudden changes in the island ecosystems that have occurring have tipped the balance between humans and nature, damaging not only landscape diversity but also cultural diversity (Whittaker and Fernandez-Palacios,

Table 2 The final proposition adopted at the IUCN General Assembly held in 2012 in Jeju, Korea. Included in this are the comprehensive contents of overcoming the global-scale issues faced by islands and coastal systems and expanding biocultural diversity while preserving and transferring ecological knowledge. As ‘IUCN Resolution 5.115,’ this proposition was delivered to the related organizations and nations worldwide, and at the IUCN, this proposition was entered into force so that this proposition can have international networks through various programs during 2013–2016.

Strengthening biocultural diversity and traditional ecological knowledge in Asia-Pacific island regions

Recognizing that the rapid change seen in island ecosystems of the Asia-Pacific region, occasioned by the change in fishing grounds due to climate change and natural disasters such as mega-earthquakes and tsunamis, as well as due to excessive fishing activities and marine pollution, is leading to the decline of biocultural diversity

Recalling that Article 8j of the CBD highlights the importance of traditional knowledge with regards to the sustainable use and conservation of biodiversity and that IUCN has implemented related actions based on the idea that biodiversity and cultural diversity are interlinked

Considering the need to advance discussions and actions about conservation models based on traditional ecological knowledge relevant to the wise use of biodiversity in island-coastal areas whose ecosystems are weakened by climate change and over-exploitation of resources, and where associated traditional cultures are affected by such changes in ecosystems

Convinced that the establishment of specialist groups in IUCN Commissions would be a very useful step to advance the conservation of biocultural diversity in island-coastal areas of Asia-Pacific regions

The IUCN World Conservation Congress at its 5th session in Jeju, Republic of Korea, 6–15 September 2012

1. Calls on members of the United Nations, including IUCN members in Asia-Pacific countries, to support activities of conservation of biocultural diversity and traditional ecological knowledge in island-coastal regions based on its uniqueness and scarcity

2. Encourages IUCN members, local governments and NGOs that have perceived the importance of traditional ecological knowledge in the wise use of biological resources in island and coastal areas to engage in supporting the preservation of traditional knowledge and biocultural diversity

3. Requests the Director General to

(a) promote the creation of a consultative body responsible for preparing a proposal for a convention or other international instruments to State members within the United Nations for the conservation of biocultural diversity and traditional ecological knowledge in island-coastal regions, and to invite IUCN member countries to engage in its promotion and support

(b) work with IUCN Commissions in the creation of an Islands Specialist Group within IUCN Commissions that will be responsible for advancing the conservation of biocultural diversity and traditional ecological knowledge in island-coastal regions and provide support for the activities of related research institutes and NGOs

In addition, the World Conservation Congress, at its 5th Session in Jeju, Republic of Korea, 6–13 September 2012, provides the following guidance concerning implementation of the IUCN Program 2013–2016

Urges IUCN Members, Commissions and the Director General to work together for the establishment of an “Asia-Pacific Island Biocultural Diversity Initiative” which, led by specialists on the policy and practice of the conservation of island-coastal biocultural diversity including scientists specializing in humanities, operates in conjunction with related organizations such as the CBD and UNESCO

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2007). Humans have been utilizing the surrounding landscape and biological resources for a long-term and, have developed new species through cultivation (such as grains and live stocks). The utilization of biological diversity has become the background that promotes cultural diversity such as food culture, residence culture, and so on. Ecological knowledge in these island cultures appears to have surpassed neighboring regions and has been spreading at next generation. In addition, the local languages and dialects are susceptible to Westernization and are also facing rapid destruction. The indigenous knowledge of natural resource use is facing demise in a similar way to the biological diversity, affected by reckless energy development and land use (Hong et al., 2013).

How to preserve disappearing indigenous knowledge is therefore a major issue. In particular, if we believe that, as in

the past, the future survival of humans will depend largely on biological diversity, then the biocultural flexibility and sustainability seen in mutual relationship between biological diversity and cultural diversity can be used to inform future co-existence with ecosystems that can support human existence. On the basis of ecological knowledge that uses the biological diversity of the island-coastal areas (that have become highly vulnerable ecosystems with increasing climate change and development), this proposal discusses the development of biocultural diversity and biocultural characteristics of sustaining mechanisms, while proposing co-operative networks with domestic and international organizations. The aim is to establish preservation strategies (Hong et al., 2013). The ‘Island Biocultural Diversity Initiative’ was launched through international workshops based on this proposition at the

World Conservation Congress (WCC2012, Jeju-do), to provide leadership and encourage action that supports the retention of biocultural diversity.

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